Cooperative Personnel Services

Year 2000 Plan

April 6th, 1999

Jim Rengstorff
Chief Information Officer, Y2K Project Coordinator

Draft

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Executive Summary

To: The CPS Board of Directors
From: Jim Rengstorff
Chief Information Officer, Y2K Project Coordinator
Date: April 6th, 1999

Cooperative Personnel Services has been committed to updating and certifying our systems for year 2000 (Y2K) compliance since the middle of 1997. We have been diligently identifying all systems that could be affected by the problem, and have strived to replace, update, or eliminate the vulnerable systems.

All of CPS's critical internal computer systems are currently compliant. A small number of less critical systems are still in the process of being updated, and will be compliant by June 30, 1999.

CPS is in the unique position of recently completing a comprehensive office automation upgrade project. Within the last two years, CPS has replaced *all* desktop workstations, servers, network hardware, and a large percentage of application software with Y2K compliant products. We have also just completed a large accounting system upgrade to a Y2K compliant product.

Coincidentally, all upgrades that resulted in Y2K compliance were performed for other reasons besides Y2K compliance. Systems were outdated and needed upgrading despite the Y2K problem, resulting in minimal expenditures that otherwise were not needed. The main Y2K expenditures are in the area of staff time assessing our systems, our external vendors systems, contingency planning, and testing.

CPS is a highly automated company, and as a result, our internal systems are of vital importance. Our main product is knowledge; we use few raw materials. Consequently, external supply interruption is not as critical as for companies that rely heavily on external suppliers such as manufacturing and distribution. The areas of concern for CPS are utilities, FedEx and mail, and paper for printing our test booklets. We rely very little on other raw materials. We are currently in the process of identifying critical external vendors, and will be requesting their Y2K plans. If they cannot offer assurance of compliance, we will identify replacements within their respective industries and prepare contingency plans for changing vendors.

The year 2000 offers many unknown obstacles; the impact could range from minor irritations to the catastrophic failure of our economy. Local power outages, temporary disruption in manufacturing and distribution, and minor inconveniences will most likely be the rule. Our clients have rigorous Y2K plans in effect, so they should stay in business and maintain their need for our services. As long as CPS maintains compliance over its systems and immediate environment, we should enjoy a relatively trouble free new year.

Please visit our web site at **http://www.cps.ca.gov/year2000** for periodic updates to this plan.

Introduction to the Year 2000 Problem

At 12:01 A.M. on January 1, 2000, many computer systems worldwide will malfunction or produce incorrect information simply because of a date change anomaly. The Year 2000 problem, as it is called, results from the way computer systems store and manipulate dates. Dates are often used as part of a computer-based system's algorithm or decision process. For efficiency and to economize storage space, most computer manufacturers and computer program designers omitted the first two digits of the year (i.e., the century) when they referred to dates in computer programs. Therefore, when the date rolls over from 1999 (99) to 2000 (00), many computer programs will fail to recognize the change in the century and misread "00" (the year 2000), as 1900.

As the year 2000 approaches, the problems associated with the date roll-over in various computer systems have become more apparent. These problems include the following:

- Inability of sort routines to perform properly
- Reversal of logic decisions
- Inability to continue forecasting for shelf life items
- Inability of inventory systems to generate correct stock level reports for reordering
- Failure of commercial products to function
- Inversion of security access rules
- Inability to properly validate intelligence data

The types of systems that will be affected include mainframes, client/servers, networks, workstations, distributed systems, telecommunications systems, and systems with embedded chips such as air conditioners, elevators, microwave ovens, traffic lights, etc. The software that is potentially impacted includes both application software and system software. Databases and files which store two-position year fields will also be affected.

There are three other date-related issues that compound the problem:

- Many of the systems developed do not to take into account that the year 2000 is a leap year and will fail on February 29th.
- Many of those same systems have associated values with date fields or they have hard-coded values (19 for the century) in the software
- Many systems that use dates typically define and use a date data type which, due to its dependence on storage structures of the computer systems, will roll-over and fail.

Implications for CPS

Many of CPS's mission critical systems, such as its core business systems can be impacted by the problem.

Failure to process the dates properly could lead to serious failures -- immediate and long-term -- among various CPS systems. The CPS Y2K Project plan will manage the Y2K repair cycle across CPS. System repairs are well underway throughout all systems, and many have already been certified Y2K compliant, as a result of following the steps in the Y2K repair process outlined here.

The Y2K problem is not a difficult technical problem to solve. However, due to the number of systems, languages, and platforms that CPS uses, it requires a coordination effort. This project plan will serve to drive coordination of Y2K repairs and project management throughout CPS.

Critical roles

To effectively carry out the Y2K program, it is important to establish the scope of responsibilities assigned to each of the parties involved.

The CPS Y2K Program Coordinator is responsible to successfully handle the agency-wide Year 2000 endeavor and is a critical component in the success of the Y2K compliance efforts. This coordinator:

- Establishes and maintains a structure, process, and schedule for the Y2K efforts across CPS
- Ensures the participation of all relevant parties
- Facilitates exchange of information between lines of business, preventing duplication of effort
- Monitors and reports status of CPS Y2K activities
- Helps coordinate conversion of cross-boundary information systems
- Establishes a scheme for ranking systems by criticality and conversion priority
- Minimizes and manages risk associated with Y2K efforts
- Manages resource allocation
- Manages internal and external communications for all CPS Y2K efforts (i.e., with industry, government, media)
- Sets Y2K policy
- Manages CPS Y2K web site
- Provides technical writing/editing expertise
- Oversees resource allocation related to Y2K efforts
- Tests/Validates
- Provides Risk Management

Legal Counsel

- Provides legal advice on potential litigation issues.

Governing body

The CPS Management Team and the Executive Director Team are the governing bodies and are ultimately responsible for the success of the Y2K project. The Governing body:

- Serves as interface for legal issues
- Determines policy on what information is “public” vs. “internal”
- Commits the resources and funding needed to ensure the success of the project.

CPS Y2K Program Goals

The Y2K Program Coordinator has outlined three major goals to be accomplished. These are presented in detail below.

Goal 1: Ensure that core CPS systems will operate reliably through the Year 2000 and beyond

Through sound management, monitoring, and detailed direction, the Y2K Program Coordinator ensures that all CPS systems operate into the Year 2000 and beyond. The Y2K problem impacts all CPS businesses and could potentially affect every system within CPS. To manage the wide scope of the problem, the Y2K Program Coordinator provides direction in setting priorities, schedules, budgets and guidelines for the agency's Y2K effort.

Goal 2: Track the status of all CPS Y2K efforts throughout the entire repair life cycle

To ensure that all Y2K efforts are carried out within the required time frames, and to avoid sporadic or inconsistent progress among different lines of business, the Y2K Program Coordinator performs centralized tracking of all Y2K efforts across the agency. To begin, the Coordinator identifies the scope and magnitude of CPS Y2K problem, and develops and maintains a master CPS systems repair schedule, illustrating the timeframe during which each system will undergo each phase of the repair process.

Goal 3: Minimize risk associated with CPS Y2K efforts

The Y2K Program Coordinator recognizes that there is a significant amount of risk associated with these Y2K efforts, and makes every attempt to reduce that risk through the implementation of specific measures. First, the Y2K Program Coordinator will work with CPS's attorneys to resolve legal issues related to vendors' provision of assessment and renovation services. Second, the Coordinator will organize financial and human resources to fulfill Y2K project requirements and activities. Third, the Y2K Program Coordinator mandates and monitors agency-wide adherence to defined Y2K processes and standards and ensures that Y2K projects for related systems are coordinated, so that changes result in system compatibility. Minimizing risk also involves managing special projects or major system renovations that require extraordinary attention.

CPS Y2K Renovation Approach

The objective of Y2K renovation projects is to achieve Year 2000 compliance. Our overall approach, described below, is designed to achieve this goal. To ensure understanding across all organizations, the Y2K Program Coordinator has accepted the following definition for Y2K compliance:

> *Y2K compliance is defined as Information Systems that are able to accurately process date data, including calculating, comparing, and sequencing from, into, and between twentieth and twenty-first centuries, including leap year calculations. Furthermore, year 2000-compliant information technology, when used in combination with other information technology, shall accurately process date/time data if the other information technology properly exchanges date/time data with it.*

CPS has adopted a renovation approach that is based on the GAO/AIMD-10.1.14 Year 2000 Assessment Guide. The guide provides a 5-phase conversion model that includes the following steps:

- Awareness
- Assessment
- Renovation
- Validation
- Implementation

The five phases, which have been tailored for CPS's systems environment, are briefly illustrated below.

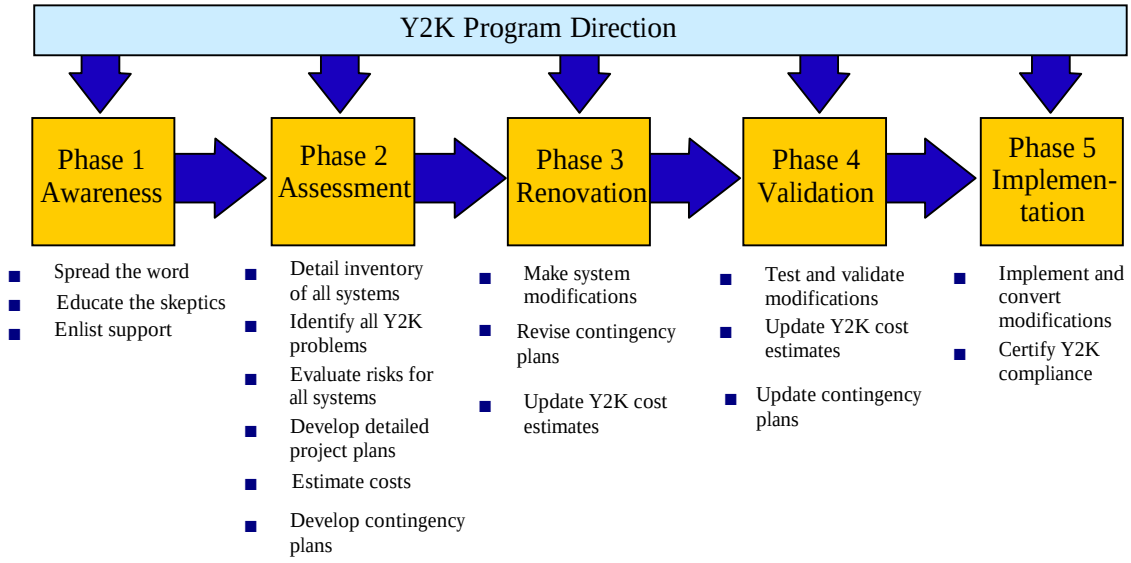

Figure 1. CPS Y2K 5-Phase Repair Approach

Awareness

The objective of this initial phase of the Year 2000 repair life-cycle is to alert organizations to the fact that the problem is applicable to their operations and that they must assign a critical priority to their Y2K efforts. A critical step in this phase is the establishment of a Y2K Program Coordinator to develop an overall strategy and ensure that the whole organization is aware and equipped to carry it out. The Y2K Program Coordinator has accepted the responsibility of providing leadership in defining and explaining the importance of achieving Y2K compliance, selecting the overall approach for structuring CPS's Y2K program, assessing the adequacy of the existing infrastructure to support the Year 2000 efforts, and mobilizing needed resources.

CPS's Y2K awareness activities include the development of a high level assessment plan. The findings of this activity will be analyzed to identify critical applications, inadequate commitments, or lack of problem awareness.

Awareness Tasks

- Develop CPS Y2K Project Plan (3/2/98)
- Develop CPS Y2K Repair Process and Standards (3/25/98)
- Plan and Implement Communications Strategy (3/2/98)
  The Y2K Program Coordinator must provide ongoing communications to ensure continual awareness of the Year 2000 compliance effort. Effective communications management provides a means for reporting the status, efforts and relevant Y2K information within CPS and to other interested parties. Communications efforts will include the following:
  - Briefings to CPS executive management and the Board of Directors.
  - Updates on CPS's Internet site
  - Article placements in internal and external publications
  - News releases/Public announcements
- Develop CPS Y2K Systems Baseline (3/20/98)
  The Y2K Program Coordinator, in order to determine the magnitude of the Y2K issues and establish the priorities for renovation, needs to understand the software and hardware portfolio of the Agency, the architecture of the systems, their configuration, and the planned evolution of architecture and configuration for future years. The necessary information will be collected into CPS's Y2K Systems Baseline. Need to collect system inventories and repair cost estimates

Assessment

To gain a clear understanding of specific Y2K issues, a detailed assessment of each system must be completed. Also, since the Y2K problem is largely a management problem and secondarily a technical problem, the process of identifying and ranking our systems should not be limited to a simple inventory of applications and platforms, but must include assessments of the impact of system failures on CPS's core business areas and processes. To adequately assess and prioritize the Y2K issues, the Y2K Program Coordinator must review the available system information and determine the priorities for Y2K system renovation.

The assessment will also include systems using information technology that operates outside the traditional information resource area, including building infrastructure systems, telephone switching equipment, etc. During this phase, the systems will be inventoried and analyzed, and detailed plans for each system will be developed.

Assessment Tasks (3/30/98)

- Identify what systems are mission-critical systems and *must* be converted or replaced
- Identify what systems support important functions and *should* be converted or replaced;
- Identify what systems support marginal functions and *may* be converted or replaced later
- Identify what systems are no longer necessary and should be eliminated.
- Develop Y2K vendor lists
  - Research and collect information regarding automated tools and vendors that could work in CPS computing environments
  - Create a Web site listing of available tools and vendors that will include links to Y2K tool and vendor listings available on the Internet
- Update CPS Y2K Project Plan and Budget
  - Update and coordinate schedule changes, as required
  - Review and update budget change requests to determine if additional or decreased funding is required

See appendix 1 for systems assessment

Renovation

After completion of the Assessment Phase, the resulting system inventories and application portfolios will provide a listing of Y2K impacted system components needing renovation. The Renovation Phase includes the conversion, replacement, or elimination of selected hardware platforms, applications, operating systems, databases, COTS packages, utilities, and internal and external interfaces. The efforts during this phase involve making and documenting software and hardware changes, developing replacement systems, and decommissioning eliminated systems. This phase will likely consume the largest amount of elapsed schedule time, but is the least complex given that the repairs are expected to be relatively straightforward.

All changes to the systems and their components will be made under configuration management to ensure that changes are adequately documented and coordinated throughout each line of business. Equally important will be ensuring that system owners assess dependencies on external data and develop a communications strategy and agreements that will ensure formal commitments and renovation strategies for both internal and external data interfaces. These strategies may involve interim measures such as development of data "bridges" and "filters" or conversion to Y2K compliant formats if needed.

Renovation Tasks (6/30/99)

- Convert, update, or replace affected systems
- Create required data bridges
- Monitor Renovation Activities
- Throughout the Repair Process, monitor and report on the progress of those systems requiring renovation.
- Ensure that renovations are being carried out properly and according to schedule
- Update CPS's Y2K Project Plan and Budget

See appendix 1 for systems and status

Validation

During the Validation Phase, all converted or replaced system components will be tested to uncover errors introduced during the Renovation Phase. Tests will validate Y2K compliance and verify operational readiness. The Y2K Program Coordinator will provide assistance by evaluating testing tools and providing testing "best practices" as support to the lines of business. In addition, the Y2K Program Coordinator will use the system inventories and application portfolios to track Y2K test and validation progress and ensure that quality standards have been met. In addition, the Y2K Program Coordinator will develop an overall end-to-end testing strategy and will oversee its implementation.

The following is a Y2K validation criteria checklist:

- General Integrity
    - All language dependent date functions return correct values for year-month-day for dates starting January 1, 2000 and including February 29, 2000.
    - All unique date functions (Julian, offset, windows) return the correct date value for dates starting January 1, 2000 and including February 29, 2000.
    - Date manipulations produce the desired results for all valid date values within the range of dates a system is expected to process.
- Interface Integrity
    - The system operates as expected when it processes interfaces that contain date information starting on January 1, 2000 and including February 29, 2000.
- Data Integrity
    - Classify all stored date values in the system as explicit or implicit century dates.
    - Ensure that all queries and data record retrievals return the correct rows and records for information that is appropriate to the system's domain.
    - Ensure that the system's internal expiration dates operate as expected.
- Input Integrity
    - All date entry fields confirm that valid dates are accepted by the system.
    - The system operates as expected after accepting a date-based input.
    - The system stores the date values input through the user interfaces in a consistent and appropriate manner.
- Output Integrity
    - Outputs using dates have been identified and inspected for the impact of dates starting with January 1, 2000 and including February 29, 2000.
    - Users have reviewed and approved the outputs from Year 2000 system validation activities for the range of dates that the system must handle, and dates starting with January 1, 2000 and including February 29, 2000.
- Processing Integrity
    - All logic branches and logic paths that follow date-based comparisons are included in specific string and system tests.

Validation Tasks (8/30/99)

- Check all affected systems after renovation for compliance
- Obtain vendor certification

See appendix 1 for validation progress

Implementation

Implementation of Y2K compliant systems and their components requires extensive integration and acceptance testing to ensure that all converted or replaced system components perform adequately in CPS's real-time operating environment.

Since system components will be converted and tested at different times, we expect to operate in a heterogeneous computing environment comprised of a mix of Y2K compliant and non-compliant applications and components. The re-integration of Y2K compliant applications will be carefully coordinated to account for system interdependencies and we will repeat acceptance testing where necessary. Contingency plans will be established prior to implementation to ensure adequate fallback positions should an operational problem occur.

Implementation Tasks (8/30/99)

- Monitor Implementation Activities and Results
- Develop and Maintain CPS's Y2K Contingency Plan
- Communicate CPS's Y2K Repair Efforts and Progress
- Develop and Maintain CPS's Y2K Internet Site
  - To communicate vital and timely information to the general public, it is important for CPS to have an Internet site that explains the steps the agency is taking to account for the Year 2000 problem.
- Maintain Y2K Vendor Listings
- Monitor CPS's Y2K Repair Activities

See appendix 1 for systems implementation progress

Critical Success Factors

To effectively manage the Y2K efforts throughout CPS, the Y2K Program Coordinator must remain aware of several factors that are critical to success. In particular, the Y2K Program Coordinator recognizes legal issues, procurement challenges, budgetary constraints, and CPS-wide coordination requirements that must be addressed during the Y2K repair cycle.

- **Resolution of Legal Issues.** There are several legal issues that will pose challenges to the agency during the course of the Y2K project. First, licenses for COTS software and hardware used by CPS may not allow for any party besides vendors to make adjustments or renovations to that software or hardware. If the software or hardware vendors are no longer in existence, this may generate complications for the agency. On the other hand, if the vendors are still in operation, they may not be able to work within the renovation time frame required by the agency. If vendors do make renovations, there is a question of whether or not these vendors will be liable or responsible for problems or failures that occur in or after the Year 2000. In addition, CPS must remain aware of its own responsibility and liability in the face of these changes and must be cautious about internal modifications that could adversely affect external parties. For example, changes to source code on CPS systems may impact interfacing systems belonging to external parties. To address and resolve these legal issues, the Y2K Program Coordinator must involve CPS's legal department as a key advisor during the Y2K compliance activities. Up front involvement of legal also reduces later risks associated with liability.

- **Expedited Procurement Process.** To complete the Y2K repairs prior to the immovable deadline of the Year 2000, CPS faces multiple issues related to procurement and acquisition. First, the proper vendors must be available to perform assessments, renovation and testing within the time frame required. There must be existing vendors that have the capability to work on all of the non-compliant systems since the window of opportunity is short for completing required activities. In order to obtain contracts as soon as possible and allow work to begin immediately, the Y2K Program Coordinator must make efforts to accelerate the procurement process within the legal constraints of CPS's federal procurement procedures. In addition, CPS must make provisions for managing and monitoring a large number of contracts and a significant number of contractors.

- **Ensure Budget Availability**. To manage costs effectively, the Y2K Program Coordinator must ensure that CPS maintains an accurate and flexible budget for conducting Y2K efforts.

- **Y2K Activities within Ongoing Systems Acquisitions / Development Projects.** There are a number of software development projects already underway which must be addressed, as they may exacerbate or be affected by the Year 2000 problem. To avoid future complications and additional non-compliance, it must be ensured that all systems under development be Y2K compliant prior to rollout. As well, there must be change control and strong configuration management across businesses to ensure that Y2K conversions or efforts are universal. The Y2K Program Coordinator recognizes that the shifting of resources to the Y2K efforts and the Y2K schedule may impact many existing and future software development projects and therefore require that these projects be aligned with Y2K efforts or be postponed to allow for the efficient handling of the Y2K problem. The Y2K Program Coordinator will mandate that all systems currently being developed and all systems acquired in the future be Y2K compliant. In addition, the Y2K Program Coordinator will communicate compliance requirements and

provide assessment and renovation direction for ongoing software development and acquisition projects.

Appendix 1

Systems Compliance Matrix

Appendix 2

Sample Letters to Clients and Vendors

(Property/infrastructure letter)

April 4, 1999

[company name]
[address]
[city, state, ZIP]

Dear Sir:

The year-2000 computer date problem has received much press of late, and our customers would like our assurances that we will be able to provide uninterrupted services up to and beyond the year 2000. As a result, we have begun the process of reviewing all of our internal computer systems and correcting all problems. This is not enough, however.

As a resident of the property located on Lathrop Way, we rely heavily on the systems that control heating and cooling, electricity, fire detection/prevention and all other essential functions. According to many experts, the computer processes that control systems such as these may be unable to correctly process after 1999. Since these systems are not under our control, we must rely on you to make sure that they are, or will be, capable of functioning without error up to and beyond the year 2000.

Before we can inform our customers that we will have no year-2000-related disruptions in service, we must receive the following from you:

- A list of all systems on the property that are controlled by computer.
- Your assurances that each system will function properly, without a year-2000 date-related error.

Thank you for your assistance with this critical matter. I look forward to your reply within three weeks of the date of this letter.

Sincerely,

Jim Rengstorff
Chief Information Officer, Y2K Project Coordinator

enclosure

(General vendor letter)

April 4, 1999

[company name]
[address]
[city, state, ZIP]

Dear Sir:

The year-2000 computer date problem has received much press of late, and our customers would like our assurances that we will be able to provide uninterrupted services up to and beyond the year 2000. As a result, we have begun the process of reviewing all of our internal computer systems and correcting all problems. But, this is not enough.

Having uninterrupted access to services provided by your company is critical to our ability to conduct business. The stability of our company could be damaged if your systems failed to properly process dates beyond 1999. To guarantee uninterrupted services to our customers, we require your assurances that your company is preparing to survive the year-2000 crisis, and that your services will be available to us without interruption.

In addition to assuring us that your systems will be year-2000 compliant, please provide information about your efforts to inform your customers.

Thank you for your assistance with this critical matter. I look forward to your reply within three weeks of the date of this letter.

Sincerely,

Jim Rengstorff
Chief Information Officer, Y2K Project Coordinator

enclosure

(General client letter)

April 4, 1999

[company name]
[address]
[city, state, ZIP]

Dear Sir:

The year-2000 computer date problem has received much press of late, and our customers would like our assurances that we will be able to provide uninterrupted services up to and beyond the year 2000. As a result, we have begun the process of alerting our clients of our Year 2000 (Y2K) readiness.

Cooperative Personnel Services has been committed to updating and certifying our systems for Y2K compliance since the middle of 1997. We have been diligently identifying all systems that could be affected by the problem, and have strived to replace, update, or eliminate the vulnerable systems.

As of April 1st, 1999, all of CPS's critical internal systems are Y2K compliant and should suffer no interruption in service to its clients. CPS is in the unique position of recently completing a comprehensive office automation upgrade project. Within the last two years, CPS has replaced *all* desktop workstations, servers, network hardware, and a large percentage of application software with Y2K compliant products.

In addition, all of CPS's critical vendors have committed to Y2K compliance by the New Year. Please visit our web site at http://www.cps.ca.gov/year2000 for the current status of our Y2K efforts.

Sincerely,

Jim Rengstorff
Chief Information Officer, Y2K Project Coordinator